

What is claimed is:

1. A base station apparatus comprising:

priority determining means for determining priority
5 for a communication terminal apparatus in communication;

transmission destination determining means for
determining one or a plurality of communication terminal
apparatuses to which packet transmission is performed
based on the direction in which each communication
10 terminal apparatus exists and said priority; and

directivity transmitting means for carrying out
packet signal transmission with directivity to said
determined communication terminal apparatus.

15 2. The base station apparatus according to claim 1, wherein
the transmission destination determining means selects
the communication terminal apparatus with the highest
priority first and then selects the communication
terminal apparatus with the highest priority from among
20 the communication terminal apparatuses except the
communication terminal apparatus affected by the packet
signal sent to the first selected communication terminal
apparatus.

25 3. The base station apparatus according to claim 1, wherein
when the directivity transmitting means divides
communication terminal apparatuses into several groups

and carries out transmission with directivity formed group by group, the transmission destination determining means selects the communication terminal apparatus with the highest priority from each group.

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4. The base station apparatus according to claim 1, further comprising modulation system determining means for determining a packet signal modulation system based on the channel quality of the downlink, wherein the
10 directivity transmitting means modulates packets according to said determined modulation system and carries out transmission with directivity.

5. The base station apparatus according to claim 4, wherein
15 the modulation system determining means adopts a higher rate modulation system as the channel quality of the downlink increases.

6. The base station apparatus according to claim 4, further
20 comprising density calculating means for calculating the density of a peripheral area of the communication terminal apparatus determined by the transmission destination determining means and directivity width controlling means for controlling directivity widths based on the
25 modulation system and said calculated density, wherein the modulation system determining means determines the modulation system of the packet signal based on said

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calculated density and the directivity transmitting means carries out transmission with directivity under the control of said directivity width controlling means.

5 7. The base station apparatus according to claim 6, wherein the modulation system determining means adopts a higher rate modulation system as the density calculated by the density calculating means decreases.

10 8. The base station apparatus according to claim 6, wherein the directivity width controlling means controls the directivity width so that the directivity width becomes narrower for a higher rate modulation system.

15 9. The base station apparatus according to claim 6, wherein the directivity width controlling means controls the directivity width so that the directivity width becomes narrower as the density calculated by the density calculating means increases.

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10. The base station apparatus according to claim 6, further comprising speed detecting means for detecting the speed of a communication terminal apparatus determined by the transmission destination determining means, wherein the modulation system determining means determines the packet signal modulation system based on said detected speed and the directivity width controlling

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means controls directivity widths based on said detected speed.

11. The base station apparatus according to claim 10,
5 wherein the modulation system determining means adopts a lower rate modulation system as the speed detected by the speed detecting means increases.

12. The base station apparatus according to claim 10,
10 wherein the directivity width controlling means controls the directivity width so that the directivity width becomes wider as the speed detected by the speed detecting means increases.

13. A communication terminal apparatus that carries out
15 a radio communication with the base station apparatus according to claim 1 and receives packet signals sent from said base station apparatus.

20 14. A packet transmission method for a base station apparatus comprising the steps of:

determining priority for a plurality of
communication terminal apparatuses in communication in
descending order of the channel quality of the downlink;

25 determining one or a plurality of communication terminal apparatuses to which packet transmission is performed based on the direction in which each

communication terminal apparatus exists and said
priority; and

carrying out packet signal transmission with
directivity to said determined communication terminal
5 apparatus.

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